I Claim:

1. A macromolecular assembly comprising a body and at least four catalytic leg units having nucleic acids, the assembly being adapted to travel across a layer of feed oligonucleotide fuel substrate molecules wherein each catalyic leg unit recognizes and binds to a fuel substrate, cleaves the fuel substrate and searches for a new fuel substrate, said leg units alternately binding and cleaving out of phase to keep at least one leg unit bound to a fuel substrate.

2. The macromolecule of claim 1, wherein the leg units have the same nucleic acids.

3. The macromolecule of claim 1, wherein the leg units have different nucleic acids.

4. The macromolecule of claim 1, comprising at least six catalytic leg units.

5. The macromolecule of claim 1, wherein the four leg units are arranged in a tetrahedral relationship.

6. The macromolecule of claim 1, wherein the four leg units are arranged in a rectangular relationship.

7. The macromolecule of claim 1, wherein the leg units are comprised of DNA enzymes.

8. The macromolecule of claim 1, wherein the leg units are comprised of RNA enzymes.

9. The macromolecule of claim 1, wherein the body is comprised of streptavidine.

10. The macromolecule f claim 1, wherein the body is comprised of DNA.

11. The macromolecule of claim 1, wherein the body is comprised of RNA.

12. The macromolecule of claim 1, wherein the leg units include flexible polyethylene glycolspacers.

13. A macromolecular system, comprising the macromolecule of claim 1, and a feed layer having oligonucleotide substrates as fuel molecules.

14. The system of claim 13, wherein the oligonucleotides are made of DNA.

15. The system of claim 13, wherein the oligonucleotides are made of RNA.

16. The system of claim 13, wherein the oligonucleotides are made of a mixture of DNA and RNA.

17. The system of claim 13, wherein the fuel molecules are arranged in a gradient on the substrate.

18. The system of claim 13, wherein the leg units comprise different nucleic acids.